VOLUME 50 1986 NUMBER 1

CONTENTS

N. N. DANILOV: Dynamically stable principles of optimality in cooperative differential games on quick action operation 1
V. E. BERBYUK: The use of first integrals in problems of synthesizing optimal control systems 11
A. B. PIUNOVSKII: Optimal control of stepwise processes with periodic characteristics 16
A. S. SUMBATOV: On uniform linear invariant relations of the equations of dynamics 22
A. V. KARAPETYAN and V. N. RUBANOVSKII: On the stability of stationary motions of non-conservative mechanical systems 30
V. SH. BURD: Stability under constantly acting perturbations, and averaging in an unbounded interval in systems with impulses 35
A. I. IL'IN: On the stability of unsteady motions 40
A. A. ZEVIN: Non-local criteria for the existence and stability of periodic oscillations in autonomous Hamiltonian systems 45
S. A. BELIKOV: Stability of the uniform rotation of a gyrostat round the vertical main axis on an absolutely smooth horizontal plane 51
V. V. STRUMINSKII and M. SH. SHAVALIYEV: Transport phenomena in multivelocity, multitemperature gas mixtures 59
V. L. GRIGORENKO and A. N. KRAIKO: Internal shock waves in supersonic ideal gas flows past wedge–plate and cone–cylinder configurations 65
V. M. TESHUKOV: On the shock polars in a gas with general equations of state 71
S. A. POSLAVSKII and I. S. SHIKIN: On non-one-dimensional selfsimilar solutions with plane waves in gas dynamics 75
E. A. GERSHBEIN, V. G. KRUPA and V. S. SHCHELIN: Investigation of a three-dimensional hypersonic viscous shock layer on blunt bodies around which flow occurs at angles of attack and slippage 79
M. A. DEMIDOV and A. P. MIKHAILOV: Effects of localization and formation of structures during the compression of a finite mass of gas in a peaking mode 85
O. A. IVANENKO and L. A. FIL'SHTINSKII: On the theory of regular piecewise-homogeneous structures with piezoceramic matrices 92
LE KHAN' CHAU: The theory of piezoelectric shells 98
N. N. ROGACHEVA: Classification of free piezoceramic shell vibrations 106
K. V. DEMIDOV: Differential games with variable structure, with a group of pursuers chasing a single target 111
ZH. KH. BAIMURZAYEVA: On constructing a functional in the problem of optimal control 115
A. S. OZIRANER: The use of quadratic forms to study the stability with respect to part of the variables 119
A. A. BUROV: On the non-existence of a supplementary integral in the problem of a heavy two-link plane pendulum 123
I. V. ANDRIANOV: Construction of simplified equations of non-linear dynamics of plates and shallow shells by the averaging method 126

VOLUME 50 1986 NUMBER 2

CONTENTS

V. V. BELETSKII and E. M. LEVIN: The stability of rotation of a satellite ring 131
N. E. BOLOTINA, V. G. VIL'KE and YU. G. MARKOV: On the rotational motion of a solid carrying a visco-elastic disc in a central field of force 136
I. I. KOSENKO: On a power series expansion of the gravitational potential of an inhomogeneous ellipsoid 142
L. D. AKULENKO and A. S. SHAMAYEV: Approximate solution of some perturbed boundary value problems 146
K. S. MATVIICHUK: The technical stability of parametrically excitable distributed processes 154
V. V. POPOV: Vibrations of a segment of a variable-length longitudinally-moving string 161
A. M. KRASNOSEL'SKII: New theorems on forced periodic oscillations in non-linear control systems 165
L. V. PETUKHOV: On optimal problems of the theory of elasticity with unknown boundaries 170
N. KH. ARUTYUNYAN, A. B. MOVCHAN and S. A. NAZAROV: On correct formulations of Lekhnitskii problems 174
A. A. SYAS'KII: Elastic equilibrium of a plate with a partially reinforced curvilinear hole 182
M. A. SUMBATYAN and I. F. KHRDZHIYANTS: On the theory of thick slabs on an elastic foundation 189
V. V. LOBODA: On singularities of the state of stress of an orthotropic half-strip 195
L. A. AGALOVYAN and R. C. GEVORKYAN: On the asymptotic solution of mixed three-dimensional problems for double-layer anisotropic plates 202
A. D. DROZDOV and D. M. ZHUKOVITSKII: Stability of circular plates from ageing viscoelastic material 208
V. A. LOMAZOV and YU. V. NEMIROVSKII: A mathematical model of the problem of diagnosing a thermoelastic medium 212
O. V. ONISHCHUK, G. YA. POPOV and P. G. FARSHAIT: On the singularities of contact forces in the bending of plates with fine inclusions 219
V. F. YEMETS: On the inverse problem of the scattering of elastic waves by a thin foreign inclusion 226
S. K. KANAUN and V. M. LEVIN: Propagation of elastic waves through media with thin crack-like inclusions 231
L. M. FILIPPOVA: Stress distribution near the edge of a crack in a prestressed elastic body 240
A. I. ALEKSANDROV, V. G. BOBORYKIN and YU. A. MEL'NIKOV: An iterative method of solving the problem of interaction between elastic bodies 246
A. B. MOSOLOV: Neutral loading in the endochronic model of the theory of plasticity 249
L. A. KIPNIS: A piecewise-homogeneous plane with a separating boundary in the form of the sides of an angle and a symmetrical cut originating from the vertex 252

VOLUME 50 1986 NUMBER 3

CONTENTS

E. G. AL'BREKHT: Extremal strategies in non-linear differential games 255
V. F. ZHURAVLEV: The application of monomial lie groups to the problem of asymptotically integrating equations of mechanics 260
V. I. VOROTNIKOV: Stability with respect to a specified number of variables 266
A. D. MOROZOV: On evolutionary motions of a particle in a gravitational field 271
V. A. VLADIMIROV and D. G. VOSTRETSOV: Instability of steady flows with constant vorticity in vessels of elliptic cross-section 279
V. I. PLIS: Diffraction of Kelvin waves in a rotating semibounded basin containing a semi-infinite wall 286
V. N. LIKHACHEV: Influence of dissipation on the propagation of a spherical explosion shock wave 290
E. V. BOGDANOVA and O. S. RYZHOV: On laminar preseparation flow 297
V. N. DIYESPEROV: Investigation of selfsimilar solutions describing flows in mixing layers 303
V. S. PROTSENKO, A. I. SOLOV'YEV and V. V. TSYMBALYUK: Torsion of elastic bodies bounded by coordinate surfaces of toroidal spherical coordinate systems 313
L. S. SRUBSHCHIK and V. I. YUDOVICH: On the dynamic snap-through of a non-linear elastic system 322
V. A. GOLOVANOV, A. L. POPOV and G. N. CHERNYSHEV: The vibrations of a bounded plate in a fluid 330
LE KHAN' CHAU: High-frequency longitudinal vibrations of elastic rods 335
B. N. KLOCHKOV: Elastic waves in a material with chemomechanical reactions 341
V. M. FOMIN: Non-stationary dynamic contact problem for a periodic system of stamps under arbitrary loading 350
B. A. GALANOV: On the non-linear boundary equations of the mechanics of the contact of rough elastic bodies 357
V. I. KUZ'MENKO: Inverse contact problems of the theory of plasticity 361
B. A. DRUYANOV: Generalized solutions in the theory of plasticity 367
A. G. BYKOVTSEV: The refraction of a shear wave in a non-linearly elastic and elastoplastic half-space 373
G. P. CHEREPANOV: The motion of point defects in solids 380
V. B. GORSKII: Vortical flows and canonical equations of motion of a magnetizable, perfectly conducting fluid 388
V. N. POKROVSKII and A. A. TSKHAI: Slow motion of a particle in a weakly anisotropic viscous fluid 391
V. SH. SHAGAPOV: On the stability of a vapour–liquid medium containing bubbles 394
V. I. OLIFER: A general solution of the static problem of the theory of asymmetrical elasticity 399
S. B. VIGDERGAUZ and A. V. CHERKAYEV: A hole in a plate, optimal for its biaxial extension–compression 401

VOLUME 50 1986 NUMBER 4

CONTENTS

A. I. PANASYUK: Equations of the dynamics of sets of reachability in problems of optimization and control under conditions of uncertainty 405
V. B. KOLMANOVSKII and A. V. FROLOV: Optimal estimates of the coordinates of systems with a time lag with respect to a set of continuous and discrete observations 415
A. G. PASHKOV: Comparison of the solutions of linear and non-linear positional differential games of encounter 421
A. A. AZAMOV: On an alternative for pursuit-evasion games in an infinite time interval 428
A. G. AZIZOV: On the motion of a controlled system of variable mass 433
M. A. GOL'DSHTIK and N. I. YAVORSKII: On submerged jets 438
I. G. NESTERUK: The restrictions of the parameters of cavitational flow 446
A. L. SHTARAS: Asymptotic solution of boundary value problems for weakly perturbed wave equations 449
A. G. KULIKOVSKII: Equations describing the propagation of non-linear quasitransverse waves in a weakly non-isotropic elastic body 455
V. M. TESHUKOV: Spatial interaction of strong discontinuities in a gas 461
V. I. TRAVUSH: On a method of solving problems of the bending of rods and plates of piecewise-constant stiffness 470
A. F. KRIVOI, G. YA. POPOV and M. V. RADIOLLO: Certain problems of an arbitrarily oriented stringer in a composite anisotropic plane 475
S. K. KANAUN and L. T. KUDRYAVTSEVA: Spherically layered inclusions in a homogeneous elastic medium 483
A. P. PODDUBNYAK: Integral equations of the problem of the torsion of an elastic body with a thin disc-like inclusion 492
T. G. RUMYANTSEVA, T. N. SELEZNEVA and M. G. SELEZNEV: The three-dimensional problem of steady oscillations of an elastic half-space with a spherical cavity 497
I. V. VOROTYNTSEVA: Plane contact problems for a physically non-linear prestressed elastic medium 502
E. L. NAKHMEIN and B. M. NULLER: Contact between an elastic half-plane and a partly separated stamp 507
L. B. RAPOPORT: Lyapunov stability and sign definiteness of a quadratic form in a cone 515
M. PASKAL: The use of the method of averaging to study non-linear oscillations of the celtic stone 520
A. Z. BRYUM and G. V. GORR: The sufficient conditions for the existence of asymptotically pendulum-like motions of a heavy rigid body with a fixed point 522
M. YU. IVANOV, V. K. KOROBOV, V. M. NIKOLAYENKO and K. P. STANYUKOVICH: Compression of a multilayered medium under the action of a variable external pressure 525
A. YU. POPOV: Forced oscillations in imperfect and statically loaded shells 529
S. B. MAKSIMOV: The problem of the flow of a plastic material along a surface 533
L. A. SARAYEV: Effective properties of multicomponent elastoplastic composite materials 537

VOLUME 50 1986 NUMBER 5

CONTENTS

L. G. KURAKIN and V. I. YUDOVICH: Semi-invariant form of equilibrium stability criteria in critical cases 543
A. P. IVANOV: On the correctness of the basic problem of dynamics in systems with friction 547
A. A. BEKOV: Integrable cases of the Hamilton–Jacobi equations and dynamic systems reducible to canonical form 550
V. A. VLADIMIROV: Analogues of the Lagrange theorem in the hydrodynamics of whirling and stratified liquids 559
S. N. NETREBA: The reaction of stratified rotating media to local thermal effects 565
V. V. RYNDINA: Dependence of the dispersion curves of internal waves of a stratified ocean on the Vaisala–Brent frequency 570
A. G. BASHKIROV: Surface properties and stability of shock waves in gases 576
N. N. BOBKOV and YU. P. GUPALO: On inertial effects on discontinuities in the concentration of the solid phase in a disperse medium 583
N. V. PARSHIKOVA: Calculation of the force and moment of forces acting on a drop in an arbitrary non-steady flow of a viscous fluid 594
V. A. MISYURA: Estimate of the error occurring in the linearization of geometrically non-linear problems of the theory of elasticity 601
M. A. ZADOYAN: Dynamic deformation of incompressible media 605
A. L. RADOVINSKII: Dynamics of elastic electrically conducting shells in constant and non-stationary magnetic fields 614
A. S. BYKOVTSEV: Propagation of complex discontinuities with piecewise constant and variable velocities along curvilinear and branching trajectories 620
S. A. NAZAROV and P. K. CHERNYAEV: Antiplane shear of a domain with two closely located cracks 629
R. V. GOL'DSHTEIN and YU. V. ZHITNIKOV: Equilibrium of cavities and cracks — slits with overlap and opening domains in an elastic medium 638
L. B. KOREL'SHTEIN: Asymptotic solution of spatial problems of elasticity theory about extended plane shear cracks 645
A. M. LIN'KOV and S. G. MOGILEVSKAYA: Finite-part integrals in problems of three-dimensional cracks 652
A. P. BLINOV: The asymptotic stability of systems with delay 658
V. P. YEVTEYEV: A family of almost circular orbits in the inner version of the circular three-body problem 663
V. A. KURYAKOV: A method of constructing polhodes of an intermediate motion in the dynamics of a rigid body 666
A. P. ANYUTIN and V. A. BOROVIKOV: Evolution of localized disturbances of a stratified fluid with variable Brent–Vaisala frequency 670
V. L. MAZO and M. S. RUDERMAN: One-dimensional stability of dissipative couette flow 674
V. I. MALYI: One representation of the conditions of the compatibility of deformations 679
M. I. GUSEIN-ZADE: The nature of sound emission in the forced vibrations of shells in a compressible fluid 682

VOLUME 50 1986 NUMBER 6

CONTENTS

I. F. OBRAZTSOV: Pressing problems in the mechanics of composite material structures 687
YU. I. KADASHEVICH, V. V. NOVOZHILOV and YU. A. CHERNYAKOV: Theory of plasticity and creep taking account of microstrains 690
N. N. KRASOVSKII: On synthesis in a differential game 696
L. I. SEDOV: On the relativistic theory of rocket flight 700
V. V. STRUMINSKII: The kinetic theory of gases in dispersed media 706
V. V. RUMYANTSEV: On the stability of the steady-state motions of systems with quasicyclic coordinates 711
V. V. KOZLOV: Asymptotic motions and the inversion of the Lagrange–Dirichlet theorem 719
S. D. FURTA: On the asymptotic solutions of the equations of motion of mechanical systems 726
YA. M. GOL'TSER: On a measure of the closeness of neutral systems to internal resonance 731
A. L. KUNITSYN and L. T. TASHIMOV: On the instability of a periodic system in the case of internal resonance 738
A. A. BUROV and G. I. SUBKHANKULOV: On the motion of a solid in a magnetic field 743
A. Z. BRYUM and A. YA. SAVCHENKO: On the orbital stability of a periodic solution of the equations of motion of a Kovalevskaya gyroscope 748
O. S. RYZHOV and E. D. TERENT'EV: On the transition mode characterizing the triggering of a vibrator in the subsonic boundary layer on a plate 753
V. F. SANNIKOV: Remote stationary wave field generated by local perturbing sources in a flow of stratified fluid 762
G. G. CHERNAYA: Diffusion analogue of a combustion wave in a system with discrete sources 769
D. I. SHERMAN: On certain additions to the theory of one singular integral equation 777
V. D. POTAPOV: Stability of a growing viscoelastic rod subjected to ageing 782
I. I. KUDISH: The contact problem of elasticity theory for bodies with cracks 789
N KH. ARUTYUNYAN and V. V. METLOV: On the principle of invariance in the theory of inhomogeneously ageing shells 800
A. I. POLUBARINOVA: A method for solving partial differential equations using differentiable trigonometric Fourier series 802
A. G. KULIKOVSKII: Some comments on the book "Hydrodynamics" by L. D. Landau and E. M. Lifshitz 806
Author/Title Alphabetical Index I

ISSN 0021–8928

Printed in Great Britain by Express Litho Service (Oxford) 248